

System Operators' Impact Assessment of CMC_07_24 and updated proposed legal drafting

Version 1.0

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1. Introduction

In decision SEM-24-070 by the SEM Committee in respect of proposed modification CMC_07_24 “Treatment of Capacity Contracts of Varying Duration in Constrained Auction Solution”, the SEM Committee stated:

“..., the SEM Committee is content to approve the principle of prioritising shorter duration contracts in the resolution of constraints subject to consideration of the impact assessment on the system solution and any associated unintended consequences. To ensure the final legal drafting can facilitate the final algorithmic solution agreed to implement this Modification Proposal, the SEM Committee is not approving the legal drafting proposed in the Modification Proposal form for CMC_07_24 but will undertake further consideration regarding the final legal drafting following the review of the SOs’ impact assessment.”

The System Operators have undertaken an impact assessment of the proposed changes and propose the legal drafting set out in Appendix A of this document as the final legal drafting for CMC_07_24. The System Operators understand that the Regulatory Authorities may wish to publish this document alongside any decision in this regard.

2. Background

Modification CMC_07_24 “Treatment of Capacity Contracts of Varying Duration in Constrained Auction Solution” was proposed by Energia and received by the System Operators on 15th May 2024.

Exempt Price Quantity Pairs are capacity market Offers with capacity durations of greater than one year and prices greater than the Auction Clearing Price. Where they are exempted under F.4.1.9 by the Regulatory Authorities, they may be considered in the maximisation of Net Social Welfare subject to various constraints including Locational Capacity Constraint Area quantities. In accordance with paragraph F.8.4.4 (f) of the Capacity Market Code, these Exempt Price Quantity Pairs cannot clear the auction until all relevant one-year Capacity Market Offers have been cleared, regardless of the Offer price associated with the one-year Offers.

There are four types of offers that can contribute to meeting a Locational Capacity Constraint that we will consider in this document:

- Type A: One-year offers (duration = 1 year).
- Type B: Multi-year in-merit offers (duration > 1 year and offered price <= Auction Clearing Price).
- Type C: Multi-year out-of-merit offers (duration > 1 year and offered price > Auction Clearing Price), for CMUs that have been exempted under F.4.1.9, which are defined as Exempt Price-Quantity Pairs.
- Type D: Multi-year out-of-merit offers (duration > 1 year and offered price > Auction Clearing Price), for CMUs that have not been exempted under F.4.1.9, which are cleared to zero in accordance with F.8.4.3.

All offers that can contribute to meeting a Locational Capacity Constraint fall into one and only one of the above categories.

Energia’s original modification proposal sought to maintain this primacy of one-year duration Offers (Type A) in the resolution of constraints, but to give next preference to shorter duration Exempt Price Quantity Pairs (defined as less than or equal to five years in duration) (Type C) over longer duration Exempt Price Quantity Pairs (defined as greater than five years in duration) (Type C).

Energia considered two options:

Option 1: For the purposes of clearing Exempt Price Quantity Pairs, a total cost would be assigned to each offer being the product of the requested price and contract duration (with one-year contracts being treated equivalently as today); or

Option 2: A second prioritisation category would be introduced in F.8.4.4 (f) changing the current situation of:

One-year contracts are prioritised over

multi-year duration contracts

to:

One-year contracts are prioritised over

multi-year duration contracts up or equal to five years, which in turn are prioritised over

multi-year duration contracts greater than five years up or equal to ten years.

The original version of CMC_07_24 was drafted based on the second consideration (Option 2).

3. Updated version of CMC_07_24

Following a Capacity Market modification workshop 37, Energia provided an updated [Modification Proposal](#) to reflect feedback received at the Workshop. This was consulted on by the Regulatory Authorities. These proposed changes are set out below.

F.8.2.3 In the software program used to conduct Capacity Auctions, the System Operators shall include a feature that allows Locational Capacity Constraints to be violated subject to the following conditions:

- (i) any violation of a Location Capacity Constraint shall be on the basis of a notional cost equal to the price of the violation included in the Locational Capacity Constraint Information multiplied by the quantity of the violation;
- (ii) the level of these prices shall be set so that ⁽¹⁾~~no~~ such violations **shall only** occur if:
 - (A) ⁽²⁾~~no~~ breach of any other requirement of F.8.4.4 (other than F.8.4.4 (e)) has occurred; and
 - (B) no solution that satisfies the Locational Capacity Constraints ⁽³⁾~~would~~ otherwise exists that could be found by the software program ~~without~~ such violations;
- (iii) the cost of all violations for all Locational Capacity Constraints is minimized.

[Comments

- (1) *Optional change to positively express the scenarios where a violation might occur (as opposed to the double negative phrasing)*
- (2) *Change suggested to ensure all other requirements of F.8.4.4 have primacy and the auction solution should breach the locational capacity constraints first.*
- (3) *Continued discretionary drafting clarity*

F.8.4.4 Subject to paragraphs F.8.4.6, F.8.4.6A and F.8.4.7, the System Operators shall determine the remaining price-quantity pairs contained in Capacity Auction Offers cleared in a Capacity Auction by applying the following rules:

...

(e) from the set of price-quantity pairs relating to Capacity Market Units that contribute to satisfying the Net Required Quantity determined in respect of a Locational Capacity Constraint: ⁽⁴⁾**either:**

- (i) either
 - (A) ⁽⁵⁾the cumulative quantity cleared ~~shall~~ equals or exceeds that Net Required Quantity; or
 - (B) if sub-paragraph (A) ~~above~~ does not apply, all of those price-quantity pairs ⁽⁶⁾~~as determined pursuant to paragraph F.8.3.2 on violation of the Locational Capacity Constraint~~ shall be cleared; and
- (ii) either:
 - (A) the cumulative quantity cleared ⁽⁷⁾~~shall~~ not exceed the Net Maximum Quantity; ~~and~~ or
 - (B) ⁽⁸⁾~~if~~ sub-paragraph (A) above does not apply, all of those price-quantity pairs ⁽⁶⁾~~as determined pursuant to paragraph F.8.3.2 on violation of the Locational Capacity Constraint~~ shall be cleared; and

(f) ⁽⁹⁾Exempt Price-Quantity Pairs are to have their price multiplied by their quantity, multiplied by their offered capacity duration for the purposes of maximising Net Social Welfare as set out in F.8.4.2. ~~not to be cleared to satisfy a Locational Capacity Constraint~~

or to maximise Net Social Welfare until all applicable price-quantity pairs with an offered capacity duration of one Capacity Year have been cleared.

[Comments

- (4) *Deletion of spurious “either”.*
- (5) *Discretionary drafting clarity.*
- (6) *Prevents F.8.3.2 reaching an auction solution (without reaching the Net Required Quantity, despite capacity being available to do so due to more expensive violation of Net Maximum Quantity) which in turn requires F.8.4.4(a)(ii) to clear such available non-cleared capacity anyway, which would be contrary to the intent of F.8.3.2.*
- (7) *Discretionary drafting clarity*
- (8) *As per note (3) above, allows for the operation of F.8.3.2 in line with the auction objectives (which allow for a Net Maximum Quantity to be breached). This also sets a clear (albeit) implicit hierarchy between the Net Maximum Quantity breaches and the absolute requirements of F.8.4.4(f).*
- (9) ***Core Element of Modification:** By multiplying Exempt PQ Pairs by their duration in the calculation of Net Social Welfare, this will effectively give priority to contracts with a shorter duration over a contract with a longer duration. The majority of the existing F.8.4.4(f) is removed as the TSOs have advised that this would be the simplest method of applying priority to shorter-duration contracts in the algorithm.*

4. SEM Committee decision

Following a period of consultation and having considered the views set out in the submissions, the SEM Committee issued decision SEM-24-070 including the following in respect of CMC_07_24 (emphasis added):

2.3.9. *As stated, the SEM Committee supports the principle of prioritising shorter duration contracts in the resolution of constraints and requests that the SOs assess the solution and provide an impact assessment to give effect to this Modification. The SEM Committee will then consider the proposed solution, assess any unintended consequences that might arise and progress the appropriate legal drafting*

2.3.10. *In developing its Modification Proposal, Energia has considered different ways to achieve its objective. Given that the implementation of this Modification Proposal is not feasible in time for the upcoming auction, the SEM Committee would prefer that the solution developed would maintain the primacy of one-year offers for the purposes of solving constraints. This better reflects the intention of the State aid decision, for locational constraints to be addressed and resolved, and ties in with targets for decarbonisation.*

2.3.11. *On the basis of the reasons outlined above, the SEM Committee is content to approve the principle of prioritising shorter duration contracts in the resolution of constraints subject to consideration of the impact assessment on the system solution and any associated unintended consequences. To ensure the final legal drafting can facilitate the final algorithmic solution agreed to implement this Modification Proposal, the SEM Committee is not approving the legal drafting proposed in the Modification Proposal form for CMC_07_24 but will undertake further consideration regarding the final legal drafting following the review of the SOs' impact assessment.*

The System Operators have identified two key considerations in the above decision:

1. *Maintain the primacy of one-year offers in the resolution of constraints.*

By primacy, the System Operators understand this to mean that an Exempt Price-Quantity Pair cannot be cleared to satisfy a Locational Capacity Constraint until all one-year offers have been cleared.

2. *Prioritise shorter duration offers in the resolution of constraints.*

By prioritise, the System Operators understand this to mean, more than simply favouring shorter duration offers in the case of a tie, which is already in place, and less than favouring shorter duration offers in all instances, as is the case with primacy of one year offers. In the case of one year offers, there is a fundamental principle that underpins the distinction between a one-year offer and an Exempt Price-Quantity pair, which is a multi-year offer with a price above the auction clearing price (and has been exempt by the RAs). In the case of shorter and longer Exempt Price-Quantity Pairs, the same fundamental difference does not exist, and the principle is more a matter of how much cost the end consumer is being committed to and principle of favouring shorter durations to address locational capacity constraints. As price and quantity are already being optimised in the maximisation of Net Social Welfare, shorter duration Exempt Price-Quantity Pairs are prioritised by reflecting the impact that their shorter duration has on the total cost (i.e. by including duration in the cost calculation of Exempt Price-Quantity Pairs). In this way, for the same quantity, a five-year

Exempt Price-Quantity Pair will clear ahead of a ten-year Exempt Price-Quantity Pair provided that the price of the five-year offer is not more than double the price of the ten-year offer.

By shorter duration offers, the System Operators understand this to refer to shorter duration Exempt Price-Quantity Pairs. Offers with a price lower than the Auction Clearing Price are not Exempt Price-Quantity Pairs and will continue to be cleared on the basis of the price and quantity only and can be cleared before one year offers.

5. Impact assessment of updated CMC_07_24

The System Operators have carried out an impact assessment of the updated Modification Proposal included in the consultation and set out in section 3 of this document.

Respectfully, the System Operators believe that the change denoted by footnote 2 is not warranted. There is no provision in the Capacity Market Code to breach F.8.4.4 (other than as provided for in F.8.2.3 which relates only to Locational Capacity Constraints). As such, any changes regarding other potential breaches of F.8.4.4 are superfluous and may risk introducing conflict between these sections due to subtle differences in the way the paragraphs are expressed.

The other changes proposed to F.8.2.3 denoted by footnotes 1 and 3 are minor re-wordings and in the view of the System Operators are not warranted.

The removal of the spurious “either” denoted by footnote 4 in the view of the System Operators is warranted. The presence of “and” between parts (i) and (ii) indicates that the term “either” is not required.

The System Operators consider that the discretionary drafting denoted by footnotes 5 and 7 in respect of the use of Net Required Quantity in place of “quantity” is warranted as it is clearer and use of “shall” improves consistency with other sub-paragraphs.

As for footnote 2 above, the changes denoted by footnotes 6 and 8 are in the view of the System Operators not warranted. F.8.2.3 does not determine price quantity pairs. It only allows for the breaching of LCC constraint limits where the solution would be otherwise infeasible. Naturally, the process identifies whether feasible solutions exist; however, the determination of price quantity pairs for the purposes of clearing the auction only takes place in section F.8.4.

The change denoted by footnote 9 forms the core of the Modification Proposal. The System Operators acknowledge the efforts by Energia to seek to find a proposed wording that achieves both the objective of the modification proposal and also has regard for implementation complexity. The proposed solution seeks to adopt an approach, which reflects the offered capacity duration for Exempt Price-Quantity Pairs in the maximisation of Net Social Welfare in F.8.4.2.

While the proposed solution is reasonably straightforward, it is important that the price of Exempt Price Quantity Pairs reflects the offered capacity duration throughout section F.8.4 (including in the resolution of tied offers).

Furthermore, the System Operators note that the proposed solution does not give primacy to one year offers. Instead, the Capacity Auction may clear an Exempt Price-Quantity Pair instead of a one-year offer if it results in higher Net Social Welfare. This does not achieve the requirement in the SEMC decision to give primacy to one year offers. It is noted that Energia did seek to achieve this in the original proposed solution and removed it only on the understanding that maintaining the primacy of one-year offers would be highly complex to implement.

The System Operators propose in this impact assessment a variation of the drafting proposed by Energia to give effect to their suggested change but also to maintain the primacy of one-year offers in line with the SEM Committee decision.

6. SO Proposed Design

The System Operators propose to an alternative implementation to give effect to the objective of CMC_07_24 and to the SEM Committee's decision in this regard.

Priority is given to shorter duration Exempt Price-Quantity Pairs by multiplying their price by their duration. Rather than changing the code and algorithm to consider price multiplied by duration for Exempt Price-Quantity Pairs, which would be more complex to implement, the proposed approach effectively redefines the price that is used for Exempt Price Quantity Pairs for the purposes of the clearing of auction to be equal to the offer price multiplied by the offered capacity duration.

For cases where Locational Capacity Constraints are not binding, and therefore do not impact the outcome, the inclusion of duration in the price of Exempt Price Quantity Pairs ensures in all but the most improbable cases that Exempt Price Quantity Pairs do not clear for Net Social Welfare reasons. The existing approach to giving primacy of one year offers in the resolution of constraints is retained with updated wording to improve consistency with other constraints in F.8.4.4.

7. Proposed Modified Legal Text

The proposed changes to the legal draft of CMC_07_24 are set out in Appendix A. The rationale for changes using the offer types defined in section 2 (replicated below for ease of reference) is as follows:

Offer Types

There are four types of offers that can contribute to meeting a Locational Capacity Constraint that we will consider in this document:

- **Type A:** One-year offers (duration = 1 year).
- **Type B:** Multi-year in-merit offers (duration > 1 year and offered price <= Auction Clearing Price).
- **Type C:** Multi-year out-of-merit offers (duration > 1 year and offered price > Auction Clearing Price), for CMUs that have been exempted under F.4.1.9, which are defined as Exempt Price-Quantity Pairs.
- **Type D:** Multi-year out-of-merit offers (duration > 1 year and offered price > Auction Clearing Price), for CMUs that have not been exempted under F.4.1.9, which are cleared to zero in accordance with F.8.4.3.

All offers that can contribute to meeting a Locational Capacity Constraint fall into one and only one of the above categories.

F.7.1.1.

To ensure that offer curves are monotonically increasing, where price of Exempt Price Quantity Pairs (Type C) = offered price x offered duration, we require the introduction of a requirement that offered durations do not decrease with increasing price. This ensures that monotonically increasing prices with increasing quantity are preserved, which is a requirement of a mixed integer optimisation, when offered prices for Exempt Price Quantity Pairs (Type C) are multiplied by their duration.

F.8.4.3 & F.8.4.3A

F.8.4.3 deals with price quantity pairs with offered prices greater than the Auction Clearing Price and offered capacity durations of more than one year for CMUs that have not been exempted under F.4.1.9 (Type D). As Type D offers are cleared to zero MW, they are no longer considered any further here (e.g. references to offers that are not Exempt Price-Quantity Pairs will only refer to Type A and Type B).

The changes proposed here do not seek to broaden the effect of this paragraph. Firstly, we remove the reference to New Capacity. This is not a change, *per se*, in that currently all price quantity pairs that have an offered capacity duration of more than one year are considered to be New Capacity (including New Capacity that is repowered or refurbished capacity based on previous Existing Capacity) and it is the fact that the offered capacity duration is greater than one year that is the critical consideration here (and that the price exceeds the Auction Clearing Price). The change is proposed as the algorithm currently does not distinguish between Existing and New Capacity and a change would be required to the algorithm to distinguish between Existing and New Capacity for the purposes of determining Exempt Price Quantity Pairs.

In addition, the reference to Exempt Price-Quantity Pairs is removed in favour of the reference to the exemption in F.4.1.9. This gives this paragraph the exact same meaning as it currently has; however, it ensures that the changes introduced in F.8.4.3A do not introduce any circular references in respect of the term 'price' in this paragraph.

F.8.4.3A goes on to establish that for price quantity pairs for Capacity Market Units that are exempt from the application of F.8.4.3 (under F.4.1.9) and where the offered prices are greater than the Auction Clearing Price and the offered capacity durations of more than one year, that these price quantity pairs are considered Exempt Price Quantity Pairs (Type C). Critically, to prioritise shorter duration Exempt Price-Quantity Pairs (Type C), for the purposes of section F.8.4, Exempt Price Quantity Pairs (Type C) have a price that is the offered price multiplied by offered capacity duration.

F.8.4.4(f)

In order to maintain the primacy of one-year offers (Type A), F.8.4.4(f) has been updated to require the total of non-Exempt Price Quantity Pairs (Type A and Type B) to be greater than or equal to the Net Required Quantity i.e. that no Type C will be cleared to satisfy an Locational Capacity Constraint (or where this is not possible, to require that all one-year offers (Type A) that contribute to satisfying the Locational Capacity Constraints be cleared).

Example 1A: If the Net Required Quantity = 500 MW and the available non-Exempt Price Quantity Pairs = 1200 MW, of which 300 MW are one year (Type A) and 900 MW are multi-year in-merit (Type B) and Exempt Price Quantity Pairs (Type C) = 300 MW. F.8.4.4(f) requires that the amount of non-Exempt Price Quantity Pairs (Type A and Type B) cleared must be ≥ 500 MW i.e. the amount of Exempt Price Quantity Pairs (Type C) cleared due to this constraint must be 0 MW.

Example 1B: If the Net Required Quantity = 500 MW and the available non-Exempt Price Quantity Pairs = 400 MW, of which 300 MW are one year (Type A) and 100 MW are multi-year in-merit (Type B) i.e. there is not enough to satisfy the 500 MW Net Required Quantity and there is one inflexible Exempt Price Quantity Pair (Type C) = 300 MW. F.8.4.4(f) requires that all one-year offers (Type A) would be cleared (i.e. 300 MW). The remaining 200 MW would come from the combination of Type B offers (100 MW) and the Type C offers (300 MW) that maximises Net Social Welfare, where the price of the Exempt Price Quantity Pairs (Type C) would be offered price \times duration. In this example, the inflexible Exempt Price-Quantity Pair (Type C) must be cleared to satisfy the Net Required Quantity, resulting in the multi-year in-merit Type B offers not being cleared to maximise Net Social Welfare.

The form adopted here follows paragraph F.8.4.4(e) including updates proposed by Energia in respect of the explicit reference to Net Required Quantity. The proposed paragraph F.8.4.4(f) differs from F.8.4.4(e) in that it considers only those offers that contribute to satisfying the Locational Capacity Constraints *and are not Exempt Price Quantity Pairs* (i.e. Type A and Type B *and not Type C*). The Locational Capacity Constraint must be satisfied with offers that are not Exempt Price Quantity Pairs (i.e. Type A and Type B and not Type C) where this is possible (see Example 1A above). Where this is not possible, all one year offers that contribute to satisfying that Locational Capacity Constraint (Type A) must be cleared and only then can Exempt Price Quantity Pairs Type C be considered with the remaining multi-year non-Exempt Price Quantity Pairs (Type B), which do not have primacy (see Example 1B above).

The proposed changes also remove the reference to Net Social Welfare in F.8.4.4(f). In cases where LCCA requirements are not binding, i.e. the solution that maximises Net Social Welfare already satisfies the LCCA requirements, as the offered prices of Exempt Price Quantity Pairs (Type C) are being multiplied by their

duration, the requirement to prevent Exempt Price Quantity Pairs (Type C) clearing ahead of one-year offers (Type A) for Net Social Welfare is no longer required. Cases exist where a one-year offer (Type A) would be displaced by an Exempt Price Quantity Pair (Type C) for Net Social Welfare reasons; however, these cases would be very unlikely to occur. Figure 1 illustrates what would be required for a five-year Type C offer to displace a one-year Type A offer for Net Social Welfare reasons using the 2028/2029 T-4 Capacity Auction parameters.

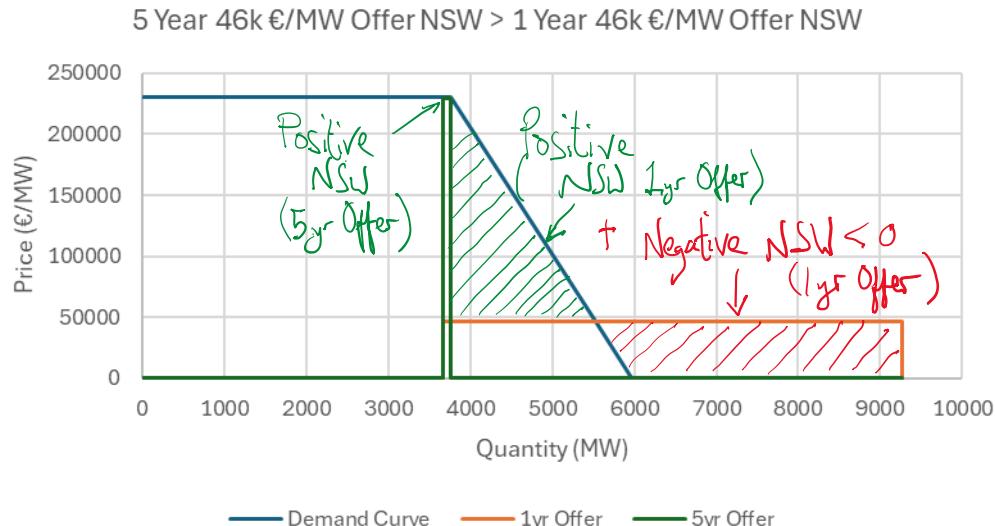


Figure 1 - 5 Year Offer displacing 1 Year Offer for Net Social Welfare

An offer will only clear for Net Social Welfare reasons if it improves Net Social Welfare. For this to occur, the price needs to be less than the demand curve price for the same quantity (at least for a portion of the offer). In the example set out in Figure 1, as the five year offer (Type C) will have its price multiplied by five, it follows that the maximum price for a five year offer (Type C) to have positive Net Social Welfare is less than 46,000 €/MW (as the Demand Curve price is 230,000 €/MW) and this would need to occur at the quantity before the Demand Curve begins to slope downwards.

As an Exempt Price Quantity Pair (Type C) by definition has a price greater than the Auction Clearing Price, it follows that the maximum Auction Clearing Price is < 46,000 €/MW. For the five-year offer (Type C) to displace the one-year offer (Type A), the Net Social Welfare associated with the one-year (Type A) offer (must be less than the Net Social Welfare of the five-year offer (Type C). As the one-year offer price is much less than the Demand Curve price, the Net Social Welfare up to the point where the one-year offer (Type A) intersects the Demand Curve is positive. The only way that the Net Social Welfare of the one-year offer (Type A) would be less than the five-year offer (Type C) is where the one-year offer (Type A) is inflexible and overshoots the Demand Curve by a significant amount. Where the one-year offer (Type A) goes beyond the Demand Curve, it would result in negative Net Social Welfare and where this exceeds the positive Net Social Welfare, the total Net Social Welfare of the one-year offer (Type A) would become less than zero. For this to occur, the one-year offer (Type A) would need to be over 5000 MW.

Clearly, this example would be very unlikely to occur as such a unit would exceed the size of the largest infeed by an order of magnitude. Nevertheless, the System Operators must ensure that the algorithm complies with the Capacity Market Code for all cases, including those which are highly unlikely to arise in practice. To ensure this, the System Operators would need to implement changes to the algorithm to prevent these situations from arising. Achieving this and ensuring that Exempt Price Quantity Pairs (Type C) can compete with in-merit multi-year offers (Type B) is very difficult to achieve and it is proposed here that it is not necessary to require this in the rules as it would be extremely unlikely to occur in practice.

F.8.4.6A

F.8.4.6A was introduced in CMC_03_19 with the introduction of Net Social Welfare to F.8.4.4(f). With the introduction of the duration as the multiplier of the price of Exempt Price Quantity Pairs (Type C) and the proposed removal of Net Social Welfare from F.8.4.4(f), F.8.4.6A is no longer required. In the case, where a tie exists between a one-year offer (Type A) and an Exempt Price Quantity Pair (Type C), and one of the offers is required to satisfy a Locational Capacity Constraint, the algorithm will favour the one-year offer (Type A) in accordance with F.8.4.4(f). Where there is a tie between a one-year offer (Type A) and an Exempt Price Quantity Pair (Type C), which would only occur in the very unlikely case explained in Figure 1, the tie would be resolved by the normal process of considering the Clean status of the unit then by shorter duration and then randomly.

Definition of Exempt Price-Quantity Pair

The definition of Exempt Price-Quantity Pair has been updated to refer F.8.4.3A to avoid risk of conflict between the glossary and this paragraph.

8. Implementation Timelines

The System Operators have developed a solution with the Capacity Market Platform system vendors to implement the proposed solution and have engaged with the certification team regarding the implementation timelines. Subject to approval by the Regulatory Authorities of the updated Modification Proposal set out in Appendix A, these changes can be implemented for the 2029/2030 T-4 Capacity Auction.

Where the Regulatory Authorities approve the Modification Proposal in Appendix A, we would suggest that any effective date is subject to successful implementation and certification and that the effective date align with approval of the changes in the Final Auction Information Pack for the 2029/2030 T-4 Capacity Auction.

Appendix A

Upon conducting a review of the Capacity Market Code and CMP Application Design, the System Operators are proposing the following modified legal text in respect of Modification Proposal CMC_07_24:

F.7 CAPACITY AUCTION OFFERS

F.7.1.1 A capacity auction offer (“**Capacity Auction Offer**”) shall relate to a single Capacity Market Unit and shall comply with the following requirements:

...

(j) the offered capacity duration in any price-quantity pair shall be a whole number of Capacity Years between one and the Maximum Capacity Duration for the capacity associated with that price-quantity pair and shall not decrease with increasing price;

F.8.4 Capacity Auction Clearing

...

Finding the initial single solution

F.8.4.2 The objective of the System Operators in applying the methodology set out in this section F.8.4 is to seek to maximise the Net Social Welfare which is the value of:

- (a) the area under the Demand Curve between a demand of zero MW and the cumulative quantity cleared from price-quantity pairs; less
- (b) the sum over all price-quantity pairs of the price of the price-quantity pair multiplied by the quantity cleared,

subject to the restrictions set out in paragraphs F.8.4.3 and F.8.4.4.

F.8.4.3 Any price-quantity pair associated with New Capacity with both:

- (a) an offered price greater than the Auction Clearing Price; and
- (b) an offered capacity duration greater than one Capacity Year,

shall be cleared to a level of zero MW and shall not otherwise be considered in the process described in this section F.8.4, unless the Capacity Market Unit has been exempted by the Regulatory Authorities under paragraph F.4.1.9 ~~it is an Exempt Price Quantity Pair~~.

F.8.4.3A In respect of any Capacity Market Unit that has been exempted from paragraph F.8.4.3 by the Regulatory Authorities under paragraph F.4.1.9, any price-quantity pair with both:

- (a) an offered price greater than the Auction Clearing Price; and
- (b) an offered capacity duration greater than one Capacity Year,

shall be considered an Exempt Price-Quantity Pair and for the purposes of section F.8.4 shall have a price equal to the offered price multiplied by the offered capacity duration.

F.8.4.4 Subject to paragraphs F.8.4.6, F.8.4.6A and F.8.4.7, the System Operators shall determine the remaining price-quantity pairs contained in Capacity Auction Offers cleared in a Capacity Auction by applying the following rules:

...

(e) from the set of price-quantity pairs relating to Capacity Market Units that contribute to satisfying the Net Required Quantity determined in respect ~~of~~ a Locational Capacity Constraint: either:

- (i) either

- (A) -the cumulative quantity cleared equals or exceeds the Net Required Quantity (subject to any violations determined in accordance with paragraph F.8.2.3); or
- (B) if sub-paragraph (A) does not apply, all of those price-quantity pairs shall be cleared; and
- (ii) the cumulative quantity cleared does not exceed the Net Maximum Quantity (subject to any violations determined in accordance with paragraph F.8.2.3); and

(f) from the set of price-quantity pairs relating to Capacity Market Units that contribute to satisfying the Net Required Quantity determined in respect of a Locational Capacity Constraint and are not Exempt Price Quantity pairs, either:

- (i) the cumulative quantity cleared equals or exceeds the Net Required Quantity (subject to any violations determined in accordance with paragraph F.8.2.3); or
- (ii) if sub-paragraph (i) does not apply, all of those price-quantity pairs with an offered duration of one year shall be cleared. Exempt Price Quantity Pairs are not to be cleared to satisfy a Locational Capacity Constraint or to maximise Net Social Welfare until all applicable price-quantity pairs with an offered capacity duration of one Capacity Year have been cleared.

...

~~F.8.4.6A An Exempt Price Quantity Pair and an price-quantity pair with a Maximum Capacity Duration of one year which both offer the same price shall not be considered as tied price-quantity pairs for the purposes of paragraph F.8.4.6~~

Exempt Price-Quantity Pair means a price-quantity pair with a price greater than the Auction Clearing Price and an offered capacity duration greater than one Capacity Year, where the relevant Capacity Market Unit has been exempted from the application of paragraph F.8.4.3 by the Regulatory Authorities under paragraph F.4.1.9 has the meaning given in paragraph F.8.4.3A.